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GEOGRAPHICAL RECORD

NORTH AMERICA

The Geographical Aspects of the Daylight Saving Act. The return to "normal" time throughout the United States at 2 A. M. on October 27 makes a survey of the geographical aspects of the Daylight Saving Act of March 19, 1918, of interest. Section 3 contains the essential provision of the act. It reads (*Monthly Weather Rev.*, Feb. 1918, pp. 75-76):

That at two o'clock antemeridian of the last Sunday in March of each year the standard time of each [time] zone shall be advanced one hour, and at two o'clock antemeridian of the last Sunday in October in each year the standard time of each zone shall, by the retarding of one hour, be returned to the mean astronomical time [i.e. mean solar time] of the degree of longitude governing said zone, so that between the last Sunday in March at two o'clock antemeridian and the last Sunday in October at two o'clock antemeridian in each year the standard time in each zone shall be one hour in advance of the mean astronomical time of the degree of longitude governing each zone, respectively.

What this means is admirably illustrated in a series of six diagrams in the *Monthly Weather Review* for February, 1918 (Pls. 19-21), on which are shown the hours of dark-

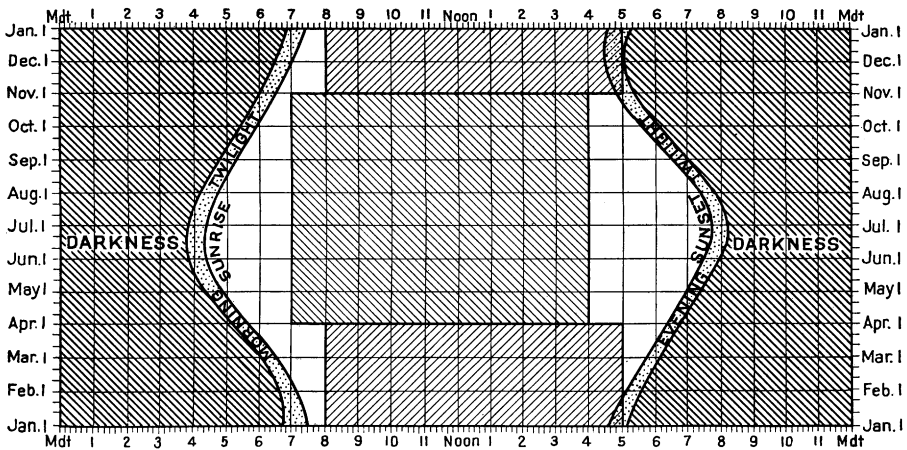


FIG. 1.—Diagram showing the time of sunrise and sunset throughout the year in latitude 42° and the relation of the ordinary hours of industrial labor to the duration of daylight according to the Daylight Saving Act of March 19, 1918. (Reproduced from the *Monthly Weather Review*, February, 1918.)

The ruled blocks in the period of daylight show the working hours between 8 A. M. and 5 P. M. as advanced and retarded by the operation of the act. The stippled bands show the duration of twilight, i. e. the time elapsed between the position of the sun on the horizon and 18° below it. The diagram is "drawn on the basis of mean solar time. Accordingly . . . the hours of labor, etc., are depicted correctly with relation to local sunrise and sunset only for places whose geographic locations fall on or close to the standard meridian governing the time for any particular zone; that is, the diagram may be assumed to represent true conditions on the 75th, 90th, and other standard-time meridians. However, since each zone comprises a full hour of difference of time it necessarily results that the saving of daylight effected by the act is increased over that shown in the diagram for the more western portions of the zone up to half an hour or thereabouts and is correspondingly reduced in the eastern portions of each zone by an amount which becomes as great as half an hour or thereabouts."

ness and daylight, including twilight, for every sixth degree of latitude from 60° to 30°. The diagram for latitude 42° is reproduced herewith, as best representing the areas of densest population in the United States. An inspection of the diagram will confirm one's personal experience of the benefits of the measure—aside from its great value in the economic domain, such as the saving of fuel and the increased industrial

output. The longer continuance of daylight in the afternoon was especially noticeable in the spring and autumn, being equivalent in this latitude in April to about three instead of the customary two hours between the usual closing time of business, 5 P. M., and sunset, and to one hour instead of none in October. This gain was attained without any undue foreshortening of the morning hours of daylight, there being about two hours of daylight between sunrise and 8 A. M. in April and half an hour in October. On October 27 this margin had been narrowed down to about ten minutes, and by December 1 the sun would not rise until 8.50, altered time. This is an indication of the condition that would have obtained had the bill been passed which was introduced in the House of Representatives on October 7 to continue the measure throughout the year.

The six diagrams in the *Monthly Weather Review* are of great value to geographers in that they show the time of sunrise and sunset throughout the year in that zone of temperate climates within which dwells the greater part of progressive mankind. While these data can be computed with the aid of any ephemeris—a somewhat tedious process—graphical representations are rare. Such diagrams make it possible to visualize the length of sunshine in various latitudes—a factor of prime importance as regards climate, plant growth, and also for its influence on man. (For diagrams showing the insolation received in different latitudes see W. M. Davis: *Elementary Meteorology*, Boston, 1903, as well as Alfred Angot: *Traité élémentaire de météorologie*, 2nd edit., Paris, 1907, pp. 15 and 18; for maps of possible hours of sunshine in summer in Canada, see “Atlas of Canada,” Dept. of Interior, 2nd edit., Ottawa, 1915, Pl. 67; for maps of actual duration of sunshine in various regions as modified by cloudiness, etc., see Bartholomew’s “Atlas of Meteorology,” London, 1899, Pl. 18.) For instance, the diagram for latitude 60° brings home strikingly the régime under which live the populations of such centers as Christiania and Petrograd, where daylight varies from barely six hours at the winter solstice (9 A. M. to 3 P. M., exclusive of an hour each of morning and evening twilight) to nineteen hours at the summer solstice (2.30 A. M. to 9.30 P. M., with one and a half hours each of twilight). Indeed, one of the noticeable features of the diagrams, viewed as a series, is the clear representation of the decreasing fluctuation between the two extremes with decreasing latitude.

Daylight saving laws of some kind have been passed in nearly all the middle latitude countries of Europe, as well as in Canada and United States. Though the measure was of English origin, having been proposed in the Sixth International Congress of Chambers of Commerce and Mercantile Associations which met in Paris in June, 1914, Germany led in adopting it, in 1916. France, England, Holland, Portugal, the Scandinavian countries, and Italy soon followed, putting it forward as a means of conserving fuel, of increasing the output of war supplies, and of affording to all an additional afternoon hour for recreation or other outdoor employment during the long summer days. The different governments have not yet, however, agreed upon a common date for making the change from one time to the other. Navigators, meteorologists, and astronomers have been exempt from the provisions of the law in England. (References: Sir Napier Shaw: “Summer Time” and the British Meteorological Office; also “Summer Time” or Daylight Saving in Other Countries, *Monthly Weather Rev.*, Feb., 1918, pp. 76-78; Miguel Barquero: *La llamada hora de verano y su aplicación á España*, 23 pp., Real Soc. Geogr., Madrid, 1917; G. F. Kunz: Daylight Saving, *Sci. Amer. Suppl.*, April 14, 1917, p. 237; *New York Times*, March 31, 1918, Section 4, p. 14.)

EUROPE

The Divergent Development of Industrialism in Britain and Germany. In an article “Some Aspects of the Industrial Revolution in Western Europe” (*Scottish Geogr. Magazine*, July, 1918, pp. 251-263) Miss Newbigin suggests certain differences in the development of industrialism between Britain and Germany. The late industrial epoch inaugurated by the industrial revolution of the later eighteenth century may be said to have occupied the last hundred years—from Waterloo to Serayevo. The earlier two-thirds of the epoch is characterized by the supremacy of Britain, the last third by the rise of the United States and Germany to the first rank. Favoring the early start and long lead of Britain were the insularity that spared her the Napoleonic turmoil of the Continent, the abundance and position of her coalfields, and her sea power. British industry arose in the Uplands, regions previously poor and figuring comparatively little in the national life. But though there was little to counteract the intoxicating force of the power of machinery and the new and sudden wealth it brought in the industrial regions themselves there was that stronger force of the *vieux monde* of traditional England—the metropolitan area. Under the influence of London the industrial areas of

the north and west have begun to create a tradition for themselves—in passing we may note the development of Manchester as a case in point. Concomitant with the growth of industrialism was the increase of population to a degree that, with the decline of rural life, meant overpopulation and emigration. The overseas colonies provided a means of escape from the industrial net and, at the same time, because of the closeness of the ties, a salutary influence on the mother country.

Thus, while the trend of modern industrialism, with its development of international capitalism and international socialism, seems to be aiming at a hegemony of the world, human life in Britain has still not lost altogether its old local basis. France has succumbed still less, and her regional life is vigorous. In Germany the ideal of advanced industrialism has progressed farthest (see Miss Newbigin's article in the present number of the *Review*, p. 417). In exact opposition to the sequence of events in England, it is the new rich region that has triumphed over the traditionally rich (cf. Dr. Fleure on Berlin, *Geogr. Rev.*, Vol. 3, 1917, pp. 399-401). Moreover, emigration of the individuals who would escape the net affords no such compensation to the homeland as Britain derives from her temperate-land colonies. Germany has sought industrial success by suppression of individuality and regionalism—quoting Friedrich Naumann ("Central Europe," English translation, London, 1916, p. 121), by "the death and surrender of the individual soul"; by the creation of a "living national human machine." It is a good omen for Britain, says Miss Newbigin (and we might add, for America, too), that in uniting with France for the defense of small nationalities, she is resisting the attempt to standardize the world.

The Utilization of Hydro-Electric Power in the French Alps. Already before the war a new economic life, based on the exploitation of hydro-electric power, had begun to transform the French Alps. By the displacement of French industry the war has greatly stimulated the process. The situation, viewed geographically, has been analyzed by Professor Raoul Blanchard of the University of Grenoble in a recent article entitled "L'industrie de la houille blanche dans les Alpes françaises" (*Annales de Géogr.*, Vol. 26, 1917, pp. 15-41). In an earlier paper, "L'état actuel de l'industrie en Dauphiné (région de Grenoble)" (*Receuil des Trav. de l'Inst. de Géogr. alpine*, Grenoble, Vol. 4, 1916, pp. 329-354), he has discussed in detail the progress of Grenoble and its immediate region, the heart of the new movement. Statistics for 1916 show the predominance of Grenoble. Out of a total of 738,000 horse-power for the entire region of the French Alps the Grenoble sub-region accounted for 231,000 horse-power. (For distribution in general, see map accompanying the article in the *Annales de Géogr.*; for detailed distribution round Grenoble, see map in "Guide Industriel du Dauphiné," published by the Chambre de Commerce of Grenoble, 1916.) The primary advantage of Grenoble lies in the combination of its Atlantic type of rainfall—more regular and abundant than that received on the Mediterranean slopes—with structural and morphological features facilitating both usage of water and communication.

The wartime growth, however, has only been achieved in the face of tremendous obstacles, against difficulties of securing raw material, shortage of transport and shortage of labor. Of the last M. Blanchard gives a particularly vivid picture in "Grenoble et sa région pendant la guerre" (*Revue de Paris*, Feb. 15, 1918). In 1913 the Grenoble sub-region (*arrondissements* of Grenoble and St. Marcellin) employed 38,000 workmen: at the end of 1917 that number had been raised to 50,000 in spite of war demands on the local male population. In pre-war days the only foreign workmen, with the exception of a few Spaniards, were Piedmontese, an ancient source of labor supply for France. Today the valleys resound to a most astonishing babel. There are refugees from all the invaded countries from northern France to Armenia. The colonies are represented by workers from Martinique, Morocco and Algeria, and Annam; the North Africans are described as a cheerful crowd but without enthusiasm for work, the Annamites as excellent and adaptive. The Chinese coolie, of whom so much has been heard, is there in numbers, and on his ability there is diversity of opinion, but he certainly is no practitioner of economy! There are German and Austrian prisoners, and the Slavs must be kept apart from Germans and Magyars—truly a motley crowd to make live and work together.

The growth achieved in these last four years has been in response to urgent necessity, but there need be no fear that it will not be maintained after the war. It has an established basis. One expression of it, typical of the French regional consciousness, is the creation of an economic region of the French Alps (*Commerce Repts.*, Jan. 3, 1918)—a forerunner of the task being undertaken for the whole of France by the Ministry of Commerce, on which the *Review* will report in a later issue. The movement was initiated by the Grenoble Chamber of Commerce, and its object is to assure "the rapid execution of all measures necessary to develop the hydro-electric industries, hotel and tourist enterprises, agriculture, and the exploitation of the forests."

AFRICA

The Vegetational Formations of South Africa. The possibility of constructing a phytogeographic map of South Africa is very appropriately considered by Professor J. W. Bews of Natal University College in the first number of the *South African Geographical Journal* (Johannesburg, 1917). South Africa offers peculiarly interesting conditions for phytogeographical research, a field but recently approached there. The first attempt to deal with the vegetation on an ecological basis was made by Marloth in "Das Kapland, insonderheit das Reich der Kapflora, das Waldgebiet, und die Karroo pflanzengeographisch dargestellt" (*Wiss. Ergebnisse der deutschen Tiefsee-Expedition auf dem Dampfer "Valdivia," 1898-1899*, Vol. 2, Part 3, Jena, 1908), a work noteworthy for its cartographic representations of the botanical regions as conceived by earlier observers, Marloth's own map, and a set of remarkably fine vegetation photographs. A paper by Bews entitled "An Account of the Chief Types of Vegetation in South Africa, With Notes on the Plant Succession" (reviewed in the *Geogr. Rev.*, Vol. 4, 1917, pp. 76-77) gave a valuable general survey of the sub-continent, while a later paper, "The Plant Ecology of the Drakensberg Range" (reviewed on pp. 462-463 of this number of the *Review*) analyzes a section in detail.

In the present paper the principal South African vegetation types are discussed in relation to the proposed map. Bews recognizes thirteen main natural types in addition to types originating through human activities. Mapping of the *forest* area should not prove difficult, for the habitat is usually well defined—"southeastern slopes facing the rain clouds and sheltered from dry hot winds, with a loose, well-aërated type of soil." Outside the high forest are the less stable woodland types, *streambank bush* and *wooded kloofs*. These types are widely distributed in the center and west of the sub-continent, where over vast areas, as along the Orange River, they constitute the only form of woodland. In dry river valleys where climatic factors are adverse to forest growth a thorny succulent *scrub* is likely to represent the climax vegetation. Its chief species, including *Acacias*, *Euphorbias*, and *Aloes*, have deep tap roots, wherefore they succeed better than the most xerophytic grassland. *Macchia* (maquis) is the characteristic and well-known type of the southwestern region with its Mediterranean habitus, though it is also carried eastwards by the mountain ranges to the Drakensberg. The *grass veld* is the most extensive of all South African types. On the edges it merges into other formations. The *Karoo* represents the effect of a dry continental climate on grassland, grasses being largely replaced by succulent and dwarf shrub types. Between the *Karoo* proper and the *grass veld* is the *Compositæ veld*. The remaining types classed as separate formations are the *salt pan* vegetation, which covers considerable areas in the interior and west; the *vleis* (marshes) and *aquatic* types, the *alpine* and *coast line* types, and the *desert*. The last-named type needs careful definition. The so-called "Kalahari Desert" is for the most part open veld; true desert is found in the Namib, the coastal belt of the west.

The Geography of the West-Central Sinai Peninsula. Twenty years ago, in 1898-1899, the Geological Survey of Egypt carried out a reconnaissance survey of western Sinai (reported in T. Barron: *The Topography and Geology of the Peninsula of Sinai, Western Portion*, Survey Dept. of Egypt, Cairo, 1907). Manganese and iron ores were discovered in a section of the country. Commercial exploitation followed, and it was lately deemed necessary to survey the more interesting parts of the region in greater detail. This work was accomplished by Dr. John Ball in 1913-1914. His report has recently been published (*The Geography and Geology of West-Central Sinai*, Survey Dept. of Egypt, Cairo, 1916). The area in question, covering some 380 square miles, touches the Gulf of Suez a little south of Abu Zenima, 75 miles from Suez. At Abu Zenima the hills descend sharply to the sea, but farther south a gravelly coastal plain intervenes between the shore and a tract of mountainous country, highly eroded and deeply cut by canyon-like wadis whose walls may be several hundred meters high. North of the mountainous stretch is a sandy plain about 500 meters in elevation. It is characterized by a shrub vegetation, and in normal years numbers of camels and goats are pastured on it. The bold, sinuous Gebel el Tih escarpment—the edge of an intensely dissected limestone plateau—limits the plain to the north. The hydrographic relations of this plateau were not fully worked out, but south of the scarp all drainage is to the Gulf of Suez and the wadis here have been carefully mapped.

Running water, usually very brackish, is found among the palm groves of some of the wadis, but the total number of sources of potable water is very limited. A list of those of any importance enumerates only 16; this was during the dry years of 1913-1914. Some rain falls practically every year, generally in the form of a drizzle or gentle shower lasting but a few minutes. Occasional heavy rain storms fill the wadis. The

author witnessed one at which the Arabs manifested their joy by dancing about in the water. The larger floods are said to occur on an average of once a decade. Comparing the erosive power of these exceptional floods with the size of the wadis, Ball expresses the opinion that the rainfall was probably greater in Pleistocene times, but he believes that the change was not very great, certain erosional features showing that "the conditions of erosion have remained nearly constant for long ages."

The native population is grouped under many minor sheikhs in the wadis. Home-grown dates and imported maize form their chief foodstuffs; camels and goats constitute their wealth. During the dry years 1913-1914 many animals died, and the survey party found much poverty.

In regard to ore deposits it is stated that faulting has been a controlling factor in their genesis; hence the geological map and sections should prove valuable aids in exploitation. Chapter II of the volume, describing the survey operations, has a particular interest in that it deals with methods, some of them new, adapted to mountainous desert conditions.

ASIA

The Resources of French Indo-China, Especially Rice. The natural resources of French Indo-China, a monsoon land of diversified topography, are rich and varied. Before the war increasing use of these resources was shown in the trade figures of the country. In 1913, despite the losses sustained in the rice fields by the Red River flood, the total trade amounted to 500,000,000 francs (Georges Devraigne: *L'Indochine économique: Son mouvement commercial, ses principaux produits naturels*, 31 pp., Ministère des Colonies, Melun, 1917). But with resumption of normal conditions France looks forward to greatly augmented development of the natural wealth of this favored possession. M. Henri Brenier, author of the "Essai d'atlas statistique de l'Indochine française" (Hanoi, 1914), puts forward the possibilities in a pamphlet "Les ressources de l'Indochine et leur mise en valeur après la guerre" (66 pp., Ministère des Colonies, Melun, 1917; see also René Chudeau: *Le rôle économique de nos colonies pendant et après la guerre*, reprint from the volume of papers read before the Association Française pour l'Avancement des Sciences in 1918). There are the forests, with valuable hardwoods and a wonderful variety of sub-products—cinnamon, camphor, resins, lacs, oils, rubber; the fisheries, that now furnish one of the staple foods of home consumption and also export to China; the pastoral resources—cattle are now shipped to China and the Philippines; the cultivations, with tea and coffee, sugar cane, cotton, and tobacco as characteristic products—but above all rice.

French Indo-China ranks as the second rice-exporting country of the world; it is surpassed only by Burma. The yield varies considerably from year to year and with it the export, but for several years the mean export has exceeded a million tons. Yet the unsatisfactory condition of the industry is the subject of much inquiry by those interested in colonial development. Compared with the grain from other rice-exporting countries that from Indo-China is of poor quality, and its yield is likewise poor. Guillaume Capus, who reviews the question in the *Annales de Géographie* for January, 1918 (*Les riz d'Indochine: Production et amélioration*), estimates that by the inadequacy of the methods of cultivation and the inferiority of the commercial varieties the agricultural revenue of the country is diminished by at least 23,000,000 francs annually.

The varieties of rice, a grain of high antiquity of culture, are innumerable, and cultivations in Indo-China are very mixed; "not a single rice field in Cochinchina but furnishes five or six varieties." The middlemen of the rice trade, usually Chinese who sail their junks up the inland waterways, buy from the individual farmers in small lots, for property, especially in the densely populated lands of the Mekong and Red River deltas, is very much broken up. There is no sorting of the varieties here or in the mill, nor does the grain receive adequate preparation for the western market. The greatest proportion finds its sale in China and Japan, the latter country using the inferior rice for domestic purposes and exporting the native rice of good quality. The mean yield of the crop in Cochinchina, the greatest rice-producing section of the country, is 1,800 to 2,000 kilograms per hectare; in Spain and Italy we find yields of from 3,000 to 6,000. What can be done by experimentation is shown by the record yield of 6,611 kilograms per hectare at the experimental station of Buitenzorg, Java. This question of increased production on so favorable a terrain as Indo-China is important from other viewpoints than that of colonial revenue: with growing industrialization of the East there will be increasing demand for its staple food—rice.

GEOGRAPHICAL NEWS

PERSONAL

MR. THEODOOR DE BOOY gave a lecture before the Explorers Club of New York on October 11, entitled "An Exploration of the Sierra de Perijá, Venezuela." An account of Mr. de Booy's exploration of this region is published in the present number of the *Review*. Mr. de Booy will address the American Geographical Society on the same topic on December 17.

M. EMMANUEL DE MARTONNE, professor of geography at the Sorbonne, has recently arrived in the United States as the geographical member of a group of French scientists who will give a series of lectures in different parts of the country on various aspects of French life. Professor de Martonne's topics will be "Paris and the Paris Region" and "The Real France, Revealed in Its Scenery and Peoples."

DR. J. N. ROSE, assistant curator of the Division of Plants of the Smithsonian Institution, left in the late summer for Ecuador to make a botanical collection in the northern Andes. This is in connection with the general botanical survey of all of South America which the Smithsonian Institution has announced it is undertaking.

MR. VILHJÁLMUR STEFÁNSSON lectured in New York City under the auspices of the American Museum of Natural History and the American Geographical Society on October 31 on the Arctic expedition from which he has recently returned. The lecture, which was illustrated by colored lantern slides, dealt with the general aspects of Arctic exploration as experienced on his expedition. A narrative account of the last two years of the expedition, accompanied by a map showing the explorer's routes, was published in the October number of the *Review*.

PROFESSOR BAILEY WILLIS of Leland Stanford Junior University on October 21 addressed the New York Academy of Sciences on "The Physical Basis of National Development."